

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

It is initially noted that the prior allowance of this application has apparently been withdrawn at the initiative of the Office as Applicants are in receipt of the further Office Action of February 7, 2008. In the Office Action, the Examiner raises issues under 35 USC 112, first paragraph as well as under 35 USC 103. However it is respectfully submitted that the present application is properly enabled to one of ordinary skill in the art, and that the present invention, at least as reflected in amended independent claims 26 and 30, clearly defines over the cited prior art to Mimura.

The Claims are Properly Enabled Under 35 USC 112, First Paragraph

In the Office Action, the Examiner rejected claims 26-45 as failing to comply with the enablement requirement of the first paragraph of 35 USC 112. Specifically, The Examiner stated that it is not understood or seen how, for example, Applicants “determine that the component holder is defective when luminance of a non-cover region of the non-cover hold face...is not smaller than a setting value, wherein the non-cover region corresponds to a region of the component hold face other than the region of said component hold face covered by the component ...It is not apparent...how a portion of the component hold face that is non-covered can be viewed whenever the hold face is holding a component thereon. Why isn't the component blocking any luminance from the component holder such that there can be no illumination of any portion of the component holder? ... how can the component holder properly function if or when it is only partially covered by a component? It appears that the component holder would not properly function inasmuch as it could not achieve any vacuum and therefore would not be able to pick up or transport any components.”

The short answer to the Examiner's questions is that the component hold face can be larger than the component that is held, and in some situations this is by necessity. This is

discussed and illustrated in the specification in the context of the method according to the present invention, as will be demonstrated in detail in the following.

Referring first to page two of the original specification, beginning at line 8, it is discussed in the context of the Background Art that “In detecting the position deviation of the electronic component 2, particularly in a case where the suction face at the suction nozzle 1 has an area larger than an area of the electronic component 2...it is difficult to distinguish a reflecting light from the suction nozzle 1 including the suction face and the reflecting light from the electronic component 2...For avoiding effects of the reflecting light from the suction nozzle 1 in the recognizer 5, the suction nozzle 1 is made from a material of a low reflectance, is coated for lowering the reflectance...However, through repetition of the suction...the suction face ...receives adhesion of metals of the electronic components 2, or the coating of the suction face peels off...In consequence, if the electronic component 2 is small relatively to the suction face...as referred to above, the recognizer 5 detects the reflecting light from the suction face of the suction nozzle 1...which leads to the trouble that the position of the electronic component 2 cannot be recognized correctly or the suction nozzle 1 is mistakenly recognized as holding the electronic component 2.” Thus, from the outset it can be seen that the present invention is at least in part addressing a situation in which a nozzle may hold a component that is smaller than the holding face of the nozzle.

On page 25, beginning at line 4, it is discussed how the component hold face 140 of the suction nozzle 201 and a light reflection face 141, which is a face opposite to a face of the electronic component held by the suction nozzle, are both illuminated.

In Figs. 14-17, there is illustrated the suction nozzle 201 with its component hold face 140. As described for example beginning at line 4 of page 48, for example, the hold face 140 has a region 601 that is covered by the electronic component 312. It can clearly be seen that this region is substantially smaller than the hold face overall. The specification goes on to describe the non-cover region 607 and the detection of contamination 603, 606 or 608. Reference number 604 is to the suction hole (described in relation to Fig. 9 in the Specification), and thus it is readily seen how a component that is smaller than the hold face 140 can be held in the region 601

by the suction through hole 604 while leaving a non-cover region 607. Note in particular the discussion on page 48 of the original specification from line 4 to line 23.

Thus, it is readily seen that a portion of the component hold face may be uncovered. The hold face is larger than many components that may be picked up by the hold face, as illustrated by the covered region and non cover region discussed above. Again, the Examiner's attention is particularly directed to page 2, line 8 to page 3, line 11, and page 49, line 14 to page 50, line 25 in the original specification.

There is a case where the component holder holds a very small component, of a size of 1mm x 0.5mm, e.g. Even in this case, it is necessary to ensure the strength of the component holder, and the component holder has to have a hold face where the area is larger than that of the component. It is thus unavoidable that a non-cover region is formed.

A coating may be applied to the component hold face to lower the reflectance to allow the shape and position of the component on the hold face to be detected. However, the coating may peel off, or metals of the components may adhere to the coating. Thus the reflectance of the non cover region may increase in parts, leading to the possibility of component recognition errors, as both the component surface and the non cover region of the hold face are illuminated and imaged.

From the above, it is respectfully submitted that the present specification fully enable the invention as set forth in the claims. Withdrawal of the rejection is accordingly requested.

The Invention of Claims 26, 29-32, 37-39 and 44-45 Clearly Distinguishes Over Mimura

In the Office Action, the Examiner rejected claims 26-31, 35-37 and 42-44 as being unpatentable over Mimura. However, the present invention, especially as now set forth in amended independent claims 26 and 30, clearly patentably defines over Mimura.

Both claims 26 and 30 have been further limited to include the limitations of claims 27 and 42, respectively. Thus, both independent claims require that the method include dividing the non-cover region of the component hold face into sections such that the determining that the component holder is defective comprises determining that the component holder is defective

when luminance of at least one of the sections of the non-cover region, based on the image-pick-up information, is not smaller than the setting value. In addition, both independent claims have been amended to emphasize that each section has the setting value.

Thus, with the present invention, the component hold face of the component holder is divided into sections that and a setting value of luminance is set to each of the sections. Then, when luminance of at least one section included in the non-cover region of the component hold face is not smaller than the setting value, it is determined that the present component holder is defective. Thus with the present invention, it can be determined whether or not the luminance of the non-cover region is not smaller than the setting value to determine whether the component holder is defective. Therefore, mistakes of reflection light reflected on the non-cover region of the component hold face being recognized as reflected light from the component can be avoided. Mimura does not disclose or suggest the above.

In Mimura, there is no determination that is based on the component holder being defective when a non-cover region is not smaller than the setting value, the non-cover region being a region other than the region of the component hold face covered by the component, the non-cover region being divided into section each of which has the setting value. Mimura is concerned with inspecting a nozzle that has already been preliminarily determined to be defective to make sure that it is defective. It does so by obtaining brightness data and conducting a brightness analysis, but without any recognized use or concern with a non-cover region of the component hold face. Mimura simply references the tip of the nozzle.

Mimura does have a method that measures the brightness of each pixel of a nozzle tip image. However, it does not divide a non-cover region into sections, each of which has the setting value. Rather, the pixel methodology of Mimura compares the brightness of the pixels at the determination stage with respective prior measurements of the pixels of the respective tip. See column 4, lines 34-58. Thus, each pixel, even if it were of a non-cover region, would not have the setting value as required by the independent claims.

In each of the independent claims, it is required that the component holder is defective when luminance of the non-cover region of the component hold face is not smaller than a setting

value. It is further required that the non-cover region of the component hold face is divided into sections, each of which has the setting value, such that determining that the component holder is defective comprises determining that the component holder is defective when luminance of at least one of the sections of the non-cover region is not smaller than the setting value. No such determination is present in Mimura. For these reasons, claims 26 and 30 clearly define over Mimura, and indication of such is respectfully requested.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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